REMARKS

I. Formal Matters.

Claims 1-20, 23 and 24 are currently pending in this application. Claims 25-32 are withdrawn from consideration, and claims 21 and 22 were cancelled via the Amendment filed on April 14, 2005.

Applicant acknowledges the Examiner's telephone call regarding the finality of the Office Action dated July 5, 2005, during which the Examiner stated that a new Final Office Action would be forthcoming, to which the period for response would be restarted.

II. 35 U.S.C. §102(b).

The Examiner rejects claim 20 as allegedly being anticipated by *Peak* (U.S. Patent No. 5,847,766) under 35 U.S.C. §102(b). Applicant respectfully traverses this rejection in view of the following remarks.

Peak discloses, "a frame bit generation estimator [which] estimates the [total encoded] bits [to be] generated in *one* frame, [EB_{FRAME}]" (col. 5, lines 56-57). Transmission speed determines a "frame target bit" for a given *one* frame, TB_{FRAME} (col. 6, lines 10-11). *Peak* uses transmission speed and the information from a single frame, or the information corresponding to less than a single frame, to formulate a target bit number for a block (Fig. 1, ref. no. 22; col. 5, line 56-col. 6 line 12). A bit table (16) stores *experimentally derived* variance information which corresponds quantization step size to a bit generation quantity in each section of a block. (col. 5, line 15-21; col. 5, lines 45-48; Table 4). Thereafter, all target bit values are calculated for units

less than or equal to a single frame, ie block or macroblock[1] (col. 5, line 56 - col. 6 line 53; TB[Mc][BV]).

In contrast, claim 20 requires, " . . . calculating an uncoded frame allocatable bit number, which is the total number of allocatable bits for multiple uncoded frames in a certain period of time, subtracted by the number of generated bits for encoded frames in a time span equal to the certain period of time. . ." Claim 20 requires taking the difference *between* the number of bits generated in encoding multiple frames in a given time period *and* the number of bits in multiple uncoded frames in the given time period. This difference is then allocated across sections (claim 20).

Peak teaches classifying blocks and macroblocks to account for variance, and calculating a block target bit number dependent upon transmission rate and an Estimated Bit Frame number (EB_{FRAME}). EB_{FRAME} is calculated from data/information pertaining only to the one given frame. (Eq. 2, col. col. 5 line 15-col. 6, line 53). Whereas claim 20 requires, calculating an allocatable bit number from the data/information across multiple frames in a given time period. One of ordinary skill in the art would appreciate the differences between block/section bit number allocation dependent upon a transmission rate and a single frame, and a block/section bit allocation number dependent upon the data/information across multiple frames in a certain time period. The former is independent of variable bit rate transmission and compression across frames. At least for failing to disclose, " . . .calculating an . . . allocatable bit number corresponding to *multiple frames* in a certain time period, by subtracting the number of generated

[1] http://www.fedele.com/website/compress/february.pdf at page 70.

bits for encoded frames in a time span equal to the certain period of time from the total number of allocatable bits in multiple uncoded frames in the certain period of time . . .", the anticipation of claim 20 by *Peak* under 35 U.S.C. §102(b) should be withdrawn.

III. 35 U.S.C. §103(a).

The Examiner rejects claims 1-24 as allegedly being unpatentable over *Ryoo* (U.S. Patent No. 5,990,957) in view of *Sun, et al.* (U.S. Patent No. 5,790,196) (*"Sun"*) under 35 U.S.C. §103(a) as set forth in the previous OA dated January 14, 2005 and further as provided in the present OA. Applicant respectfully traverses this rejection in view of the following remarks.

Claim 1. The Examiner acknowledges that *Ryoo* fails to disclose calculating an *uncoded VOP* allocatable bit number (that is the total number of allocatable bits for multiple uncoded VOPs *in a certain period of time*) based on the total number bits in uncoded VOPs and the total number of generated bits in encoded VOPs *in a time span equal to the certain period of time* (OA page 6). Therein, the Examiner relies on *Sun* to teach a means for calculating an uncoded VOP allocatable bit number, and cites to *Sun* at col. 8, lines 64-68 (OA dated January 14, 2005, page 6) and to *Sun* at col. 3, lines 14-30 (OA page 3).

Sun teaches a constant output rate of generated bits, when encoding video data (col. 3, lines 13-15). *Sun* teaches adjustment of encoded output dependent upon parameters at the object level (col. 3, lines 17-29, col. 4, lines 26-29; col. 5, lines 9-15; col. 5, lines 35-38). More particularly, a total target bit number is adjusted proportional to the number of header bits used in the previous corresponding object (col. 3, lines 19-22; col. 6, lines 8-12; claims 1-3). Examiner cited text specifically recites, ". . . difference between the actual number of header bits used for all objects in a previous frame and the total number of target bits available *for those objects in an*

instant frame". (col. 8, lines 64-68; OA dated January 14, 2005, page 6). More importantly, *Sun* teaches that a target bit number for all objects in an uncoded VOP is distributed according to corresponding object associated header bits in a previous frame to estimate a target bit number *for each object* in said uncoded VOP (col. 8, lines 50-55).

In contrast, claim 1 requires, "calculating an uncoded VOP allocatable bit number, that is the total number of allocatable bits *for multiple uncoded VOPs* in a certain period of time, wherein said calculation is based on the total number of allocatable bits for VOPs in a time span equal to the certain period of time and based on the number of generated bits for encoded VOPs in the time span, . . . allocating the uncoded VOP allocatable bit number, calculating a target bit number for the next VOP to be encoded . . ." (claim 1).

Claim 1 requires calculating an allocatable bit number for multiple VOPs. *Sun* teaches allocating a target bit number for a VOP across VOs.

In addition to allocating the uncoded VOP allocatable bit number, claim 1 requires estimating the number of bits to be generated for encoding the multiple uncoded VOPs based on the predictive area calculating parameter, which is based on an object history. *Sun* teaches estimating the target bits for each object in a given VOP. Primary Reference *Ryoo* teaches target bits are calculated for respective VOPs (col. 10, lines 1-2). Further, the target bit rate *for each* VOP is determined in part by the macroblocks included in each VOP. (*Ryoo* col. 10, lines 11-13). Niether *Ryoo*, nor *Sun* teach or suggest estimating the number of bits to be generated *for encoding the multiple uncoded VOPs.*

The differences in syntactic structure in an MPEG-4 visually encoded data stream are complex but readily known and appreciated by one of ordinary skill in the art. Video Objects are

patentably distinguishable from Video Object Planes.[2] *Sun* makes calculations, estimations, and evaluations based on different structures, different data compared to that required by claim 1. Claim 1 requires calculating an allocatable bit number for multiple VOPs, said multiple VOPs corresponding to a certain period of time, based in part on the number of bits generated in encoding VOPs in a time span equivalent to the time span in the certain period of time. Further, claim 1 requires estimating the number of bits to be generated for encoding the multiple uncoded VOPs based on the predictive area calculating parameter, where the predictive area calculating parameter is based on an object history.

Primary reference *Ryoo* fails to teach or suggest these claim elements and secondary reference *Sun* fails to provide for these deficiencies. At least for failing to teach or suggest these two claim elements, alone or in combination, the rejection of claim 1 as being obvious over *Ryoo* in view of *Sun* under 35 U.S.C. §103(a) should be withdrawn.

Claim 2 contains the subject matter asserted above in the traversal of the rejection of claim 1. calculating an allocatable VOP bit number for multiple VOPs in a certain period of time and estimating a number of bits to be generated for multiple uncoded VOPs in the certain period of time. An analogous argument to that presented above is hereby asserted in traversal of the rejection of claim 2. Therefore, at least for this deficiency the rejection of claim 2 as being obvious over *Ryoo* in view of *Sun* under 35 U.S.C. §103(a) should be withdrawn.

Claim 19 requires alculating an allocatable bit number, that is the total number of allocatable bits for multiple uncoded VOPs in a certain period of time. An analogous argument

[2] FIG 1 at http://www.informatik.uni-mannheim.de/lib/publications/Kuehne1999a.pdf; *Sun* at Fig. 1.

asserted in the traversal of claim 1 above is hereby asserted for claims 19. In turn, withdrawal of the rejection of claim 2 as being obvious over *Ryoo* in view of *Sun* under 35 U.S.C. §103(a) is deemed proper and respectfully requested.

Claims 5 and 6 require, calculating an uncoded frame allocatable bit number, which is a total number of allocatable bits for multiple uncoded frames in a certain period of time, wherein said calculation is based on a total number of allocatable bits for frames in a time span equal to the certain period of time and based on the number of generated bits for encoded frames in the time span. The Examiner applies the disclosure in *Ryoo* and *Sun* in the rejection of claims 5 and 6 as said references were applied in the rejection of claims 1 and 2 (OA dated January 14, 2005, pages 4-6).

As discussed above in the traversal of claim 1, The Examiner acknowledges that *Ryoo* fails to disclose calculating an *uncoded VOP/FRAME* allocatable bit number (that is the total number of allocatable bits for multiple uncoded VOPs/FRAMEs *in a certain period of time*) based on the total number bits in uncoded VOPs and the total number of generated bits in encoded VOPs/FRAMEs *in a time span equal to the certain period of time* (OA dated January 14, 2005, page 6). Therein, the Examiner relies on *Sun* to teach a means for calculating an uncoded VOP/FRAME allocatable bit number, and cites to *Sun* at col. 8, lines 64-68 (OA dated January 14, 2005, page 6).

Sun teaches a constant output rate of generated bits, when encoding video data (col. 3, lines 13-15). *Sun* teaches adjustment of encoded output dependent upon parameters at the object level (col. 3, lines 17-29, col. 4, lines 26-29; col. 5, lines 9-15; col. 5, lines 35-38). More particularly, a total target bit number is adjusted proportional to the number of header bits used in

the previous corresponding object (col. 3, lines 19-22; col. 6, lines 8-12; claims 1-3). Examiner cited text specifically recites, ". . . difference between the actual number of header bits used for all objects in *a previous frame* and the total number of target bits available *for those objects in an instant frame*". (col. 8, lines 64-68; OA page 6). More importantly, *Sun* teaches that a target bit number for all objects in *an uncoded VOP* is distributed according to corresponding object associated header bits in a previous frame to estimate a target bit number *for each object* in said uncoded VOP (col. 8, lines 50-55).

Sun teaches a target bit number corresponding to a single frame and target bit number for an uncoded VOP. Further, *Sun* clearly teaches a difference in syntactic MPEG 4 structure, such that frames, VOPs, and VOs are not equivalent. *Sun* fails to teach or suggest an uncoded frame allocatable bit number, that is the total number of allocatable bits for multiple uncoded frames in a certain period of time. The subject matter of claims 5 and 6 incorporate calculation of a parameter corresponding *to multiple frames* to be encoded in the future.

Ryoo and *Sun* fail to teach or suggest, alone or in combination, calculating an uncoded Frame allocatable bit number, corresponding to multiple uncoded Frames in a certain time period. At least for this deficiency the rejection of claims 5 and 6 as being unpatentable over *Ryoo* in view of *Sun* under 35 U.S.C. §103(a) should be withdrawn.

Claim 20 requires the subject matter relied in the traversal of the rejection of claims 5 and 6 above. The Examiner applies *Ryoo* and *Sun* in rejection of claim 20 as applied to the rejection of claims 5 and 6 (OA dated January 14, 2005, pages 4-7). An analogous argument to that presented above in traversal of the rejection of claims 5 and 6 is hereby asserted in traversal of the

rejection of claim 20. Therefore, withdrawal of the rejection of claim 20 as being unpatentable over *Ryoo* in view of *Sun* under 35 U.S.C. §103(a) is deemed proper and is respectfully requested.

Applicant also asserts the patentability of dependent claims 3, 4, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17 and 18 at least by virtue of their dependency upon one of independent claims 1, 2, 5 and 6.

Claims 23 and 24 are asserted as being patentable at least by virtue of their dependency on claims 19 and 20, respectively.

In view of the above, reconsideration and allowance of this application are now believed to be in order, and such actions are hereby solicited. If any points remain in issue which the Examiner feels may be best resolved through a personal or telephone interview, the Examiner is kindly requested to contact the undersigned at the telephone number listed below.

The USPTO is directed and authorized to charge all required fees, except for the Issue Fee and the Publication Fee, to Deposit Account No. 19-4880. Please also credit any overpayments to said Deposit Account.

Respectfully submitted,

Amelia F Morani

Amelia F. Morani
Registration No. 52,049

SUGHRUE MION, PLLC
Telephone: (202) 293-7060
Facsimile: (202) 293-7860

WASHINGTON OFFICE
23373
CUSTOMER NUMBER

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